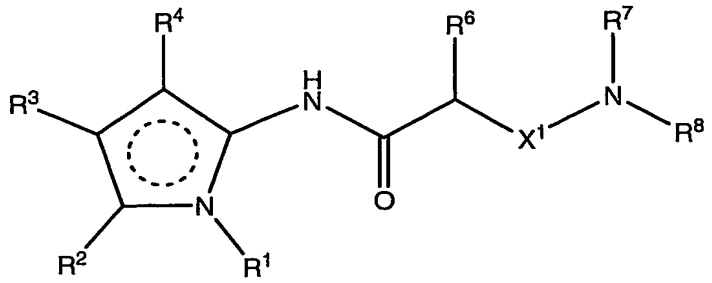
WHAT IS CLAIMED IS:

1. A compound having the structure:



wherein:

R^1 and R^3 are independently selected from -H, alkyl, alkenyl, alkynyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, alkylthio-R^{10}, thioalkyl, aminoalkyl, alkylamino-R^{10}, cycloalkyl, aryl, and aralkyl, wherein R^1 and R^3 are independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^2 is selected from -H, alkyl, alkenyl, alkynyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, cycloalkyl, aryl, aralkyl, hydroxyalkyl, guanidinoalkyl, carboxy-R^{10}, hydroxyaralkyl, alkoxyalkyl, aminoalkyl, alkylamino-R^{10}, thioalkyl, alkylthio-R^{10}, alkylsulfonyl-R^{10}, alkylsulfinyl-R^{10}, heteroaryl, heteroaryl-R^{10}, heterocyclyl, and heterocyclyl-R^{10}, wherein R^2 is substituted or unsubstituted, which if substituted, is substituted with one or more substituents selected from R^{11};

R^4 is selected from -H, cyano, alkyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, alkylsulfonyl-R^{10}, alkylsulfinyl-R^{10}, alkylthio-R^{10}, and alkylamino-R^{10};

R^5 and R^9 are independently selected from -H, alkyl, alkenyl, alkynyl, carbamyl, alkylcarbamyl, alkylthio-R^{10}, thioalkyl, aminoalkyl, alkylamino-R^{10}, cycloalkyl, aryl, aralkyl, wherein R^5 and R^9 are independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^6 and R^{10} are independently selected from -H and alkyl;

R^7 and R^8 are independently selected from -H, alkyl, alkenyl, alkynyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, alkylthio-R^{10}, thioalkyl, aminoalkyl,

alkylamino-R^{10}, cycloalkyl, aryl, aralkyl, wherein R^7 and R^8 are independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^{11} is selected from halo and haloalkyl;

X^1 is optionally present, and if present, is alkyl;

with the proviso that: when R^6 is hydrogen, R^7 is other than ethyl and/or X^1 is other than methyl; when R^7 is ethyl, R^6 is other than hydrogen and/or X^1 is other than methyl; and when X^1 is methyl, R^6 is other than hydrogen and/or R^7 is other than ethyl; and

including the isomers, racemates, salts, and prodrugs thereof.

2. The compound according to claim 1, wherein:

R^1 and R^3 are independently selected from -H, $C_1 - C_6$ alkyl, $C_1 - C_6$ alkenyl, $C_1 - C_6$ alkynyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, $C_1 - C_6$ alkylthio-R^{10}, thio-($C_1 - C_6$) alkyl, amino-($C_1 - C_6$) alkyl, $C_1 - C_6$ alkylamino-R^{10}, cycloalkyl, aryl, and aralkyl, wherein R^1 and R^3 are independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^2 is selected from -H, $C_1 - C_6$ alkyl, $C_1 - C_6$ alkenyl, $C_1 - C_6$ alkynyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, cycloalkyl, aryl, aralkyl, hydroxy-($C_1 - C_6$) alkyl, guanidino-($C_1 - C_6$) alkyl, carboxy-R^{10}, hydroxyaralkyl, alkoxyalkyl, amino-($C_1 - C_6$) alkyl, $C_1 - C_6$ alkylamino-R^{10}, thio-($C_1 - C_6$) alkyl, $C_1 - C_6$ alkylthio-R^{10}, $C_1 - C_6$ alkylsulfonyl-R^{10}, $C_1 - C_6$ alkylsulfinyl-R^{10}, heteroaryl, heteroaryl-R^{10}, heterocyclyl, and heterocyclyl-R^{10}, wherein R^2 is substituted or unsubstituted, which if substituted, is substituted with one or more substituents selected from R^{11};

R^4 is selected from -H, cyano, $C_1 - C_6$ alkyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, $C_1 - C_6$ alkylsulfonyl-R^{10}, alkylsulfinyl-R^{10}, alkylthio-R^{10}, and alkylamino-R^{10};

R^5 and R^9 are independently selected from -H, alkyl, alkenyl, alkynyl, alkylthio-R^{10}, thioalkyl, aminoalkyl, alkylamino-R^{10}, cycloalkyl, aryl, aralkyl, wherein R^5 and R^9 are independently substituted or unsubstituted,

which if substituted, are substituted with one or more substituents selected from R^{11};

R^6 and R^{10} are independently selected from -H and alkyl;

R^7 and R^8 are independently selected from -H, alkyl, alkenyl, alkynyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, alkylthio-R^{10}, thioalkyl, aminoalkyl, alkylamino-R^{10}, cycloalkyl, aryl, aralkyl, wherein R^7 and R^8 are independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^{11} is selected from halo and haloalkyl;

X^1 is optionally present, and if present, is alkyl;

with the proviso that: when R^6 is hydrogen, R^7 is other than ethyl and/or X^1 is other than methyl; when R^7 is ethyl, R^6 is other than hydrogen and/or X^1 is other than methyl; and when X^1 is methyl, R^6 is other than hydrogen and/or R^7 is other than ethyl; and

including the isomers, racemates, salts, and prodrugs thereof.

3. The compound according to claim 1, wherein:

R^1 and R^3 are independently selected from -H, $C_1 - C_6$ alkyl, $C_1 - C_6$ alkenyl, $C_1 - C_6$ alkynyl, carbamyl, carbamylalkyl, $C_1 - C_6$ alkylthio-R^{10}, thio-($C_1 - C_6$) alkyl, amino-($C_1 - C_6$) alkyl, $C_1 - C_6$ alkylamino-R^{10}, cycloalkyl, aryl, and aralkyl, wherein R^1 and R^3 are independently substituted or unsubstituted, which if substituted, are substituted with a halo substituent;

R^2 is selected from -H, $C_1 - C_6$ alkyl, $C_1 - C_6$ alkenyl, $C_1 - C_6$ alkynyl, carbamyl, carbamylalkyl, cycloalkyl, aryl, aralkyl, hydroxy-($C_1 - C_6$) alkyl, guanidino-($C_1 - C_6$) alkyl, carboxy-R^{10}, hydroxyaralkyl, alkoxyalkyl, amino-($C_1 - C_6$) alkyl, $C_1 - C_6$ alkylamino-R^{10}, thio-($C_1 - C_6$) alkyl, $C_1 - C_6$ alkylthio-R^{10}, $C_1 - C_6$ alkylsulfonyl-R^{10}, $C_1 - C_6$ alkylsulfinyl-R^{10}, heteroaryl, heteroaryl-R^{10}, heterocyclyl, and heterocyclyl-R^{10}, wherein R^2 is independently substituted or unsubstituted, which if substituted, is substituted with a halo substituent;

R^4 is carbamyl;

R^6 is selected from -H and $C_1 - C_6$ alkyl;

R^7 and R^8 are independently $C_1 - C_6$ alkyl;

X^1 is optionally present, and if present, is $C_1 - C_4$ alkyl;

with the proviso that: when R^6 is hydrogen, R^7 is other than ethyl and/or X^1 is other than methyl; when R^7 is ethyl, R^6 is other than hydrogen and/or X^1 is other than methyl; and when X^1 is methyl, R^6 is other than hydrogen and/or R^7 is other than ethyl; and

including the isomers, racemates, salts, and prodrugs thereof.

4. The compound according to claim 1, wherein:

R^1 and R^3 are independently selected from -H, $C_1 - C_6$ alkyl, carbamyl, carbamylalkyl, $C_1 - C_6$ alkylthio-R^{10}, and $C_1 - C_6$ alkylamino-R^{10};

R^2 is selected from -H, $C_1 - C_6$ alkyl, $C_1 - C_6$ alkenyl, $C_1 - C_6$ alkynyl, carbamyl, carbamylalkyl, cycloalkyl, aryl, aralkyl, hydroxy-($C_1 - C_6$) alkyl, guanidino-($C_1 - C_6$) alkyl, carboxy-R^{10}, hydroxyaralkyl, alkoxyalkyl, amino-($C_1 - C_6$) alkyl, $C_1 - C_6$ alkylamino-R^{10}, thio-($C_1 - C_6$) alkyl, $C_1 - C_6$ alkylthio-R^{10}, $C_1 - C_6$ alkylsulfonyl-R^{10}, $C_1 - C_6$ alkylsulfinyl-R^{10}, heteroaryl, heteroaryl-R^{10}, heterocyclyl, and heterocyclyl-R^{10};

R^4 is carbamyl;

R^6 is selected from -H and $C_1 - C_4$ alkyl;

R^7 and R^8 are independently selected from $C_1 - C_4$ alkyl;

X^1 is absent;

with the proviso that: when R^6 is hydrogen, R^7 is other than ethyl, when R^7 is ethyl, R^6 is other than hydrogen; and

including the isomers, racemates, salts, and prodrugs thereof.

5. The compound according to claim 1, wherein:

R^1 and R^3 are independently selected from -H, $C_1 - C_6$ alkyl, -$CONR^5R^9$, $C_1 - C_6$ alkylthio-R^{10}, and $C_1 - C_6$ alkylamino-R^{10};

R^2 is selected from -H, $C_1 - C_6$ alkyl, $C_1 - C_6$ alkenyl, $C_1 - C_6$ alkynyl, carbamyl, carbamylalkyl, cycloalkyl, aryl, aralkyl, hydroxy-($C_1 - C_6$) alkyl, guanidino-($C_1 - C_6$) alkyl, carboxy-R^{10}, hydroxyaralkyl, alkoxyalkyl,

amino-($C_1 - C_6$) alkyl, $C_1 - C_6$ alkylamino-R^{10}, thio-($C_1 - C_6$) alkyl, $C_1 - C_6$ alkylthio-R^{10}, $C_1 - C_6$ alkylsulfonyl-R^{10}, $C_1 - C_6$ alkylsulfinyl-R^{10}, heteroaryl, heteroaryl-R^{10}, heterocyclyl, and heterocyclyl-R^{10};

R^4 is carbamyl;

R^6 is selected from -H and $C_1 - C_4$ alkyl;

R^7 and R^8 are independently selected from ethyl and propyl;

X^1 is absent;

with the proviso that: when R^6 is hydrogen, R^7 is other than ethyl, when R^7 is ethyl, R^6 is other than hydrogen; and

including the isomers, racemates, salts, and prodrugs thereof.

6. The compound according to claim 1, wherein:

R^1 is -H;

R^2 is selected from -H, $C_1 - C_6$ alkyl, $C_1 - C_6$ alkenyl, $C_1 - C_6$ alkynyl, carbamyl, carbamylalkyl, cycloalkyl, aryl, aralkyl, hydroxy-($C_1 - C_6$) alkyl, guanidino-($C_1 - C_6$) alkyl, carboxy-R^{10}, hydroxyaralkyl, alkoxyalkyl, amino-($C_1 - C_6$) alkyl, $C_1 - C_6$ alkylamino-R^{10}, thio-($C_1 - C_6$) alkyl, $C_1 - C_6$ alkylthio-R^{10}, $C_1 - C_6$ alkylsulfonyl-R^{10}, $C_1 - C_6$ alkylsulfinyl-R^{10}, heteroaryl, heteroaryl-R^{10}, heterocyclyl, and heterocyclyl-R^{10};

R^3 is methyl;

R^4 is carbamyl;

R^6 is selected from -H and methyl;

R^7 and R^8 are independently $C_1 - C_4$ alkyl;

X^1 is absent;

with the proviso that: when R^6 is hydrogen, R^7 is other than ethyl, when R^7 is ethyl, R^6 is other than hydrogen; and

including the isomers, racemates, salts, and prodrugs thereof.

7. The compound according to claim 1, wherein:

R^1 is -H;

R^2 is selected from -H, $C_1 - C_6$ alkyl, $C_1 - C_6$ alkenyl, $C_1 - C_6$ alkynyl, carbamyl, carbamylalkyl, cycloalkyl, aryl, aralkyl, hydroxy-($C_1 - C_6$)

alkyl, guanidino-($C_1 - C_6$) alkyl, carboxy-R^{10}, hydroxyaralkyl, alkoxyalkyl, amino-($C_1 - C_6$) alkyl, $C_1 - C_6$ alkylamino-R^{10}, thio-($C_1 - C_6$) alkyl, $C_1 - C_6$ alkylthio-R^{10}, $C_1 - C_6$ alkylsulfonyl-R^{10}, $C_1 - C_6$ alkylsulfinyl-R^{10}, heteroaryl, heteroaryl-R^{10}, heterocyclyl, and heterocyclyl-R^{10};

R^3 is methyl;

R^4 is carbamyl;

R^6 is methyl;

R^7 and R^8 are independently $C_1 - C_4$ alkyl;

X^1 is absent; and

including the isomers, racemates, salts, and prodrugs thereof.

8. The compound according to claim 1, wherein:

R^1 is -H;

R^2 is selected from -H, $C_1 - C_4$ alkyl, carbamyl, $C_1 - C_4$ alkylamino-R^{10}, $C_1 - C_4$ alkylthio-R^{10};

R^3 is methyl;

R^4 is carbamyl;

R^6 is methyl;

R^7 and R^8 are independently selected from ethyl and propyl;

X^1 is absent; and

including the isomers, racemates, salts, and prodrugs thereof.

9. The compound according to claim 1, wherein:

R^1 is -H;

R^2 is selected from -H, $C_1 - C_4$ alkyl, carbamyl, $C_1 - C_4$ alkylamino-R^{10}, $C_1 - C_4$ alkylthio-R^{10};

R^3 and R^6 are methyl;

R^4 is carbamyl;

R^7 and R^8 are independently selected from ethyl and propyl;

X^1 is absent; and

including the isomers, racemates, salts, and prodrugs thereof.

10. The compound according to claim 1, wherein:

R^1 is -H;

R^2 is selected from -H, methyl, ethyl, carbamyl, dimethylthio, methylthioethyl, ethylthiomethyl, diethylthio, dimethylamino, and methylaminoethyl;

R^3 and R^6 are methyl;

R^4 is carbamyl;

R^7 and R^8 are independently selected from ethyl and propyl;

X^1 is absent; and

including the isomers, racemates, salts, and prodrugs thereof.

11. The compound according to claim 1, wherein:

R^1 is -H;

R^2 is selected from -H, dimethylthio, methylthioethyl, ethylthiomethyl, and diethylthio;

R^3 and R^6 are methyl;

R^4 is carbamyl;

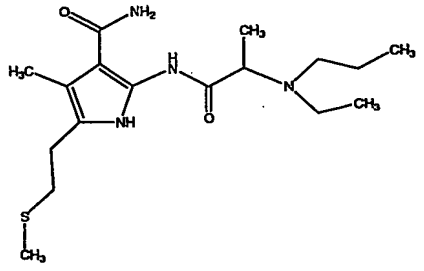
R^7 is propyl;

R^8 is ethyl;

X^1 is absent; and

including the isomers, racemates, salts, and prodrugs thereof.

12. The compound according to claim 1, wherein the compound comprises the structure:



, including the isomers, racemates, salts, and prodrugs thereof.

13. The compound according to claim 1, wherein the compound comprises 2-[2-(N-ethyl-N-n-propyl) amino] propionamido-3-carbamyl-4-methyl-5-(methylthio) pyrrole.

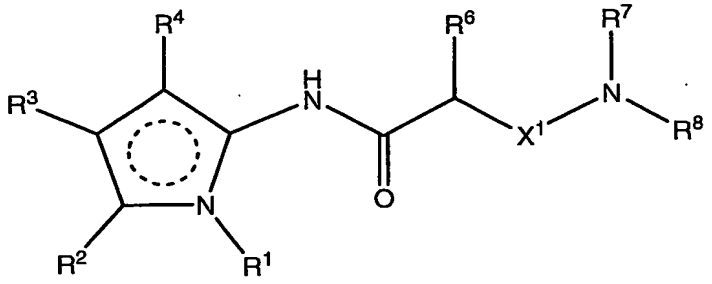
14. The compound according to claim 1, wherein the compound comprises a dual PDE-4/Ca^{2+}-channel inhibitor.

15. A therapeutic composition comprising a compound having a structure described in claim 1.

16. A pharmaceutical composition comprising a pharmaceutically acceptable excipient and at least one compound having a structure described in claim 1.

17. A kit comprising a dosage form that includes a therapeutically effective amount of at least one compound comprising a structure described in claim 1.

18. A method of inhibiting a phosphodiesterase enzyme, the method comprising contacting the phosphodiesterase enzyme with at least one compound having a structure:



wherein:

R^1 and R^3 are independently selected from -H, alkyl, alkenyl, alkynyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, alkylthio-R^{10}, thioalkyl, aminoalkyl, alkylamino-R^{10}, cycloalkyl, aryl, and aralkyl, wherein R^1 and R^3 are

independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^2 is selected from -H, alkyl, alkenyl, alkynyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, cycloalkyl, aryl, aralkyl, hydroxyalkyl, guanidinoalkyl, carboxy-R^{10}, hydroxyaralkyl, alkoxyalkyl, aminoalkyl, alkylamino-R^{10}, thioalkyl, alkylthio-R^{10}, alkylsulfonyl-R^{10}, alkylsulfinyl-R^{10}, heteroaryl, heteroaryl-R^{10}, heterocyclyl, and heterocyclyl-R^{10}, wherein R^2 is substituted or unsubstituted, which if substituted, is substituted with one or more substituents selected from R^{11};

R^4 is selected from -H, cyano, alkyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, alkylsulfonyl-R^{10}, alkylsulfinyl-R^{10}, alkylthio-R^{10}, and alkylamino-R^{10};

R^5 and R^9 are independently selected from -H, alkyl, alkenyl, alkynyl, carbamyl, alkylcarbamyl, alkylthio-R^{10}, thioalkyl, aminoalkyl, alkylamino-R^{10}, cycloalkyl, aryl, aralkyl, wherein R^5 and R^9 are independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^6 and R^{10} are independently selected from -H and alkyl;

R^7 and R^8 are independently selected from -H, alkyl, alkenyl, alkynyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, alkylthio-R^{10}, thioalkyl, aminoalkyl, alkylamino-R^{10}, cycloalkyl, aryl, aralkyl, wherein R^7 and R^8 are independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^{11} is selected from halo and haloalkyl;

X^1 is optionally present, and if present, is alkyl;

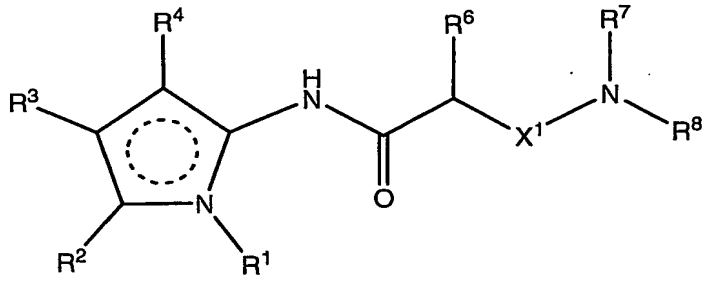
with the proviso that: when R^6 is hydrogen, R^7 is other than ethyl and/or X^1 is other than methyl; when R^7 is ethyl, R^6 is other than hydrogen and/or X^1 is other than methyl; and when X^1 is methyl, R^6 is other than hydrogen and/or R^7 is other than ethyl; and

including the isomers, racemates, salts, and prodrugs thereof.

19. The method according to claim 18, wherein the phosphodiesterase enzyme comprises a phosphodiesterase-4 enzyme.

20. The method according to claim 18, wherein the phosphodiesterase enzyme comprises a phosphodiesterase-3 enzyme.

21. A method of inhibiting L-type calcium channels, the method comprising contacting an L-type calcium channel with at least one compound having the structure:



wherein:

R^1 and R^3 are independently selected from -H, alkyl, alkenyl, alkynyl, -$CONR^5R^9$, $R^{10}CONR^5R^9$, alkylthio-R^{10}, thioalkyl, aminoalkyl, alkylamino-R^{10}, cycloalkyl, aryl, and aralkyl, wherein R^1 and R^3 are independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^2 is selected from -H, alkyl, alkenyl, alkynyl, -$CONR^5R^9$, $R^{10}CONR^5R^9$, cycloalkyl, aryl, aralkyl, hydroxyalkyl, guanidinoalkyl, carboxy-R^{10}, hydroxyaralkyl, alkoxyalkyl, aminoalkyl, alkylamino-R^{10}, thioalkyl, alkylthio-R^{10}, alkylsulfonyl-R^{10}, alkylsulfinyl-R^{10}, heteroaryl, heteroaryl-R^{10}, heterocyclyl, and heterocyclyl-R^{10}, wherein R^2 is substituted or unsubstituted, which if substituted, is substituted with one or more substituents selected from R^{11};

R^4 is selected from -H, cyano, alkyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, alkylsulfonyl-R^{10}, alkylsulfinyl-R^{10}, alkylthio-R^{10}, and alkylamino-R^{10};

R^5 and R^9 are independently selected from -H, alkyl, alkenyl, alkynyl, carbamyl, alkyl-carbamyl, alkylthio-R^{10}, thioalkyl, aminoalkyl,

alkylamino-R^{10}, cycloalkyl, aryl, aralkyl, wherein R^5 and R^9 are independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^6 and R^{10} are independently selected from -H and alkyl;

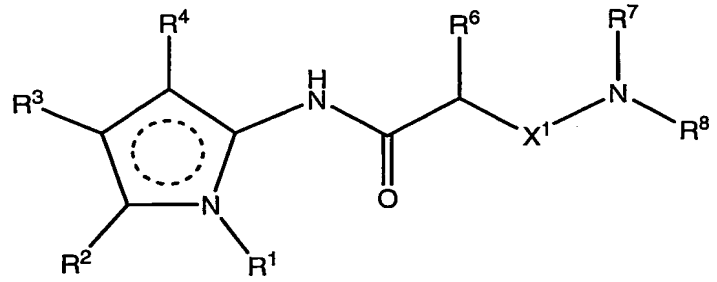
R^7 and R^8 are independently selected from -H, alkyl, alkenyl, alkynyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, alkylthio-R^{10}, thioalkyl, aminoalkyl, alkylamino-R^{10}, cycloalkyl, aryl, aralkyl, wherein R^7 and R^8 are independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^{11} is selected from halo and haloalkyl;

X^1 is optionally present, and if present, is alkyl; and

including the isomers, racemates, salts, and prodrugs thereof.

22. A method of preventing or treating a cardiovascular or respiratory disorder in a subject, the method comprising administering to the subject an effective amount of a compound having the structure:



wherein:

R^1 and R^3 are independently selected from -H, alkyl, alkenyl, alkynyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, alkylthio-R^{10}, thioalkyl, aminoalkyl, alkylamino-R^{10}, cycloalkyl, aryl, and aralkyl, wherein R^1 and R^3 are independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^2 is selected from -H, alkyl, alkenyl, alkynyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, cycloalkyl, aryl, aralkyl, hydroxyalkyl, guanidinoalkyl, carboxy-R^{10}, hydroxyaralkyl, alkoxyalkyl, aminoalkyl, alkylamino-R^{10}, thioalkyl, alkylthio-R^{10}, alkylsulfonyl-R^{10}, alkylsulfinyl-R^{10}, heteroaryl, heteroaryl-R^{10},

heterocyclyl, and heterocyclyl-R^{10}, wherein R^2 is substituted or unsubstituted, which if substituted, is substituted with one or more substituents selected from R^{11};

R^4 is selected from -H, cyano, alkyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, alkylsulfonyl-R^{10}, alkylsulfinyl-R^{10}, alkylthio-R^{10}, and alkylamino-R^{10};

R^5 and R^9 are independently selected from -H, alkyl, alkenyl, alkynyl, carbamyl, alkylcarbamyl, alkylthio-R^{10}, thioalkyl, aminoalkyl, alkylamino-R^{10}, cycloalkyl, aryl, aralkyl, wherein R^5 and R^9 are independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^6 and R^{10} are independently selected from -H and alkyl;

R^7 and R^8 are independently selected from -H, alkyl, alkenyl, alkynyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, alkylthio-R^{10}, thioalkyl, aminoalkyl, alkylamino-R^{10}, cycloalkyl, aryl, aralkyl, wherein R^7 and R^8 are independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^{11} is selected from halo and haloalkyl;

X^1 is optionally present, and if present, is alkyl; and

including the isomers, racemates, salts, and prodrugs thereof.

23. The method according to claim 22, wherein the compound is a phosphodiesterase inhibitor.

24. The method according to claim 23, wherein the compound is a cAMP-specific phosphodiesterase inhibitor.

25. The method according to claim 23, wherein the compound is a selective phosphodiesterase inhibitor.

26. The method according to claim 24, wherein the compound is a selective phosphodiesterase-4 inhibitor.

27. The method according to claim 24, wherein the compound is a phosphodiesterase-3 inhibitor.

28. The method according to claim 26, wherein the selective phosphodiesterase-4 inhibitor has an IC_{50} for inhibition of phosphodiesterase-3 of greater about 60 μM.

29. The method according to claim 28, wherein the phosphodiesterase-4 inhibitor provides an IC_{50} of less than about 200 μM.

30. The method according to claim 28, wherein the phosphodiesterase-4 inhibitor provides an IC_{50} of less than about 50 μM.

31. The method according to claim 28, wherein the phosphodiesterase-4 inhibitor provides an IC_{50} of less than about 5 μM.

32. The method according to claim 28, wherein the phosphodiesterase-4 inhibitor provides an IC_{50} of about 2 μM.

33. The method according to claim 22, wherein the subject is one that is in need of the prevention or treatment of a cardiovascular or respiratory disorder.

34. The method according to claim 22, wherein the cardiovascular disorder is chosen from myocardial ischemia, transient ischemic attack, hypertension, hypotension, heart arrhythmias, including atrial fibrillation and flutter, tachycardia, and ventricular fibrillation, pulmonary hypertension, hypokalemia, angina pectoris, cardiac ischemia, myocardial infarction, cardiac remodeling, cardiac fibrosis, myocardial necrosis, aneurysm, arterial fibrosis, embolism, vascular plaque inflammation, vascular plaque rupture, bacterial-induced inflammation and

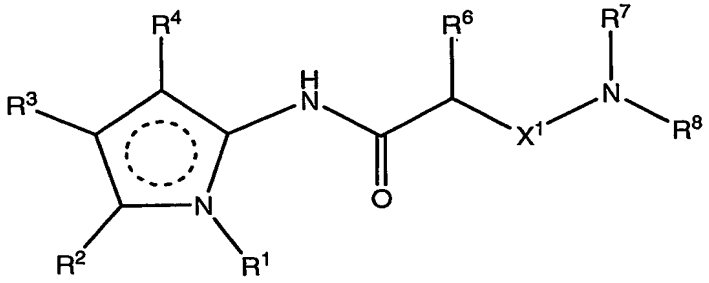
viral induced inflammation, edema, swelling, fluid accumulation, cirrhosis of the liver, Bartter's syndrome, myocarditis arteriosclerosis, atherosclerosis, calcification (such as vascular calcification and valvar calcification), coronary artery disease, coronary heart disease, peripheral arterial disease, heart failure, congestive heart failure, shock, stroke, left ventricular hypertrophy, angina, diabetic nephropathy, kidney failure, eye damage, cardiac damage, diabetic cardiac myopathy, renal insufficiency, renal injury, renal arteriopathy, peripheral vascular disease, left ventricular hypertrophy, cognitive dysfunction, headache, aortic aneurysm, deep vein thrombosis, bacterial endocarditis, cardiomyopathy, congenital cardiovascular defects, rheumatic heart disease, valvular heart disease, Adams-Stokes disease, antiphospholipid syndrome, aortic regurgitation, long Q-T syndrome, Marfan syndrome, Raynaud's syndrome, Wolff-Parkinson-White syndrome (WPW).

35. The method according to claim 22, wherein the respiratory disorder is chosen from asthma, spasmodic asthma, bronchitis, chronic obstructive pulmonary disease (COPD), cystic fibrosis, pulmonary embolism, pneumonia, pulmonary fibrosis, respiratory failure, acute respiratory distress syndrome, bronchiectasis, rhinitis, chronic rhinitis, sinusitis, chronic sinusitis, emphysema, pulmonary sarcoidosis, tuberculosis, alpha-1 antitrypsin deficiency, allergies, alveolar capillary dysplasia, asbestosis, black lung, bronchiolitis, cold, goodpasture syndrome, laryngeal cancer, laryngomalacia, legionnaires' disease, lung cancer, lymphagioleiomyomatosis (LAM), persistent cough, pleurisy (Pleuritis), Pneumothorax, Respiratory Syncytial Virus (RSV), severe acute respiratory syndrome (SARS), silicosis, sinus infection, tonsillitis, valley fever, recurrent respiratory papillomatosis, bronchopulmonary dysplasia (BPD), influenza, hantavirus pulmonary syndrome (HPS), hayfever, primary ciliary dyskinesia (PCD), kartagener's syndrome, lymphangioleiomyomatosis (LAM), mesothelioma, primary pulmonary

hypertension (PPH), spontaneous pneumothorax, meningococcemia, and wegener's granulomatosis.

36. A method of preventing or treating a cardiovascular or respiratory disorder in a subject, the method comprising administering to the subject a phosphodiesterase-4 inhibitor in combination with a calcium channel blocker, wherein the phosphodiesterase-4 inhibitor and the calcium channel blocker are the same compound.

37. A method of modulating the activity of a phosphodiesterase enzyme in a subject in need of such modulation, the method comprising administering to the subject a compound comprising the structure:



wherein:

R^1 and R^3 are independently selected from -H, alkyl, alkenyl, alkynyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, alkylthio-R^{10}, thioalkyl, aminoalkyl, alkylamino-R^{10}, cycloalkyl, aryl, and aralkyl, wherein R^1 and R^3 are independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^2 is selected from -H, alkyl, alkenyl, alkynyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, cycloalkyl, aryl, aralkyl, hydroxyalkyl, guanidinoalkyl, carboxy-R^{10}, hydroxyaralkyl, alkoxyalkyl, aminoalkyl, alkylamino-R^{10}, thioalkyl, alkylthio-R^{10}, alkylsulfonyl-R^{10}, alkylsulfinyl-R^{10}, heteroaryl, heteroaryl-R^{10}, heterocyclyl, and heterocyclyl-R^{10}, wherein R^2 is substituted or unsubstituted, which if substituted, is substituted with one or more substituents selected from R^{11};

R^4 is selected from -H, cyano, alkyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, alkylsulfonyl-R^{10}, alkylsulfinyl-R^{10}, alkylthio-R^{10}, and alkylamino-R^{10};

R^5 and R^9 are independently selected from -H, alkyl, alkenyl, alkynyl, carbamyl, alkylcarbamyl, alkylthio-R^{10}, thioalkyl, aminoalkyl, alkylamino-R^{10}, cycloalkyl, aryl, aralkyl, wherein R^5 and R^9 are independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^6 and R^{10} are independently selected from -H and alkyl;

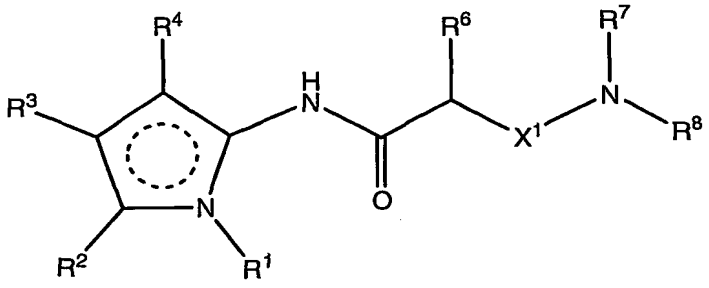
R^7 and R^8 are independently selected from -H, alkyl, alkenyl, alkynyl, -$CONR^5R^9$, $R^{10}CONR^5R^9$, alkylthio-R^{10}, thioalkyl, aminoalkyl, alkylamino-R^{10}, cycloalkyl, aryl, aralkyl, wherein R^7 and R^8 are independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^{11} is selected from halo and haloalkyl;

X^1 is optionally present, and if present, is alkyl; and

including the isomers, racemates, salts, and prodrugs thereof.

38. A method of modulating the activity of an L-type calcium channel in a subject in need of such modulation, the method comprising administering to the subject a compound comprising a structure:



wherein:

R^1 and R^3 are independently selected from -H, alkyl, alkenyl, alkynyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, alkylthio-R^{10}, thioalkyl, aminoalkyl, alkylamino-R^{10}, cycloalkyl, aryl, and aralkyl, wherein R^1 and R^3 are independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^2 is selected from -H, alkyl, alkenyl, alkynyl, -$CONR^5R^9$, $R^{10}CONR^5R^9$, cycloalkyl, aryl, aralkyl, hydroxyalkyl, guanidinoalkyl, carboxy-R^{10}, hydroxyaralkyl, alkoxyalkyl, aminoalkyl, alkylamino-R^{10}, thioalkyl, alkylthio-R^{10}, alkylsulfonyl-R^{10}, alkylsulfinyl-R^{10}, heteroaryl, heteroaryl-R^{10}, heterocyclyl, and heterocyclyl-R^{10}, wherein R^2 is substituted or unsubstituted, which if substituted, is substituted with one or more substituents selected from R^{11};

R^4 is selected from -H, cyano, alkyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, alkylsulfonyl-R^{10}, alkylsulfinyl-R^{10}, alkylthio-R^{10}, and alkylamino-R^{10};

R^5 and R^9 are independently selected from -H, alkyl, alkenyl, alkynyl, carbamyl, alkylcarbamyl, alkylthio-R^{10}, thioalkyl, aminoalkyl, alkylamino-R^{10}, cycloalkyl, aryl, aralkyl, wherein R^5 and R^9 are independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^6 and R^{10} are independently selected from -H and alkyl;

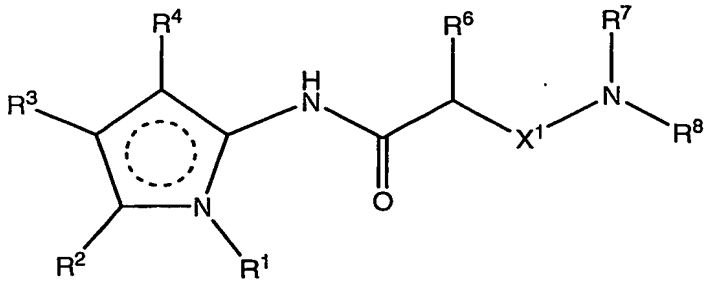
R^7 and R^8 are independently selected from -H, alkyl, alkenyl, alkynyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, alkylthio-R^{10}, thioalkyl, aminoalkyl, alkylamino-R^{10}, cycloalkyl, aryl, aralkyl, wherein R^7 and R^8 are independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^{11} is selected from halo and haloalkyl;

X^1 is optionally present, and if present, is alkyl; and

including the isomers, racemates, salts, and prodrugs thereof.

39. A method of modulating the activity of a phosphodiesterase enzyme and an L-type calcium channel in a subject in need of such modulation, the method comprising administering to the subject a compound having the structure:



wherein:

R^1 and R^3 are independently selected from -H, alkyl, alkenyl, alkynyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, alkylthio-R^{10}, thioalkyl, aminoalkyl, alkylamino-R^{10}, cycloalkyl, aryl, and aralkyl, wherein R^1 and R^3 are independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^2 is selected from -H, alkyl, alkenyl, alkynyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, cycloalkyl, aryl, aralkyl, hydroxyalkyl, guanidinoalkyl, carboxy-R^{10}, hydroxyaralkyl, alkoxyalkyl, aminoalkyl, alkylamino-R^{10}, thioalkyl, alkylthio-R^{10}, alkylsulfonyl-R^{10}, alkylsulfinyl-R^{10}, heteroaryl, heteroaryl-R^{10}, heterocyclyl, and heterocyclyl-R^{10}, wherein R^2 is substituted or unsubstituted, which if substituted, is substituted with one or more substituents selected from R^{11};

R^4 is selected from -H, cyano, alkyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, alkylsulfonyl-R^{10}, alkylsulfinyl-R^{10}, alkylthio-R^{10}, and alkylamino-R^{10};

R^5 and R^9 are independently selected from -H, alkyl, alkenyl, alkynyl, carbamyl, alkylcarbamyl, alkylthio-R^{10}, thioalkyl, aminoalkyl, alkylamino-R^{10}, cycloalkyl, aryl, aralkyl, wherein R^5 and R^9 are independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^6 and R^{10} are independently selected from -H and alkyl;

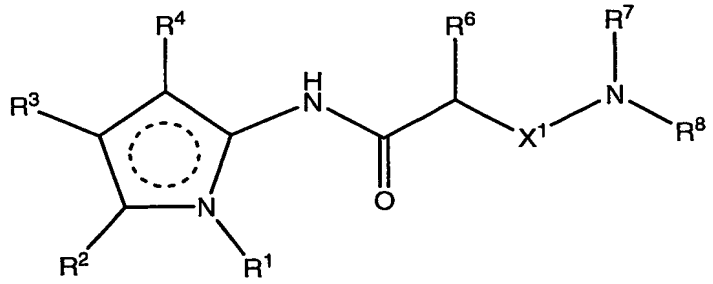
R^7 and R^8 are independently selected from -H, alkyl, alkenyl, alkynyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, alkylthio-R^{10}, thioalkyl, aminoalkyl, alkylamino-R^{10}, cycloalkyl, aryl, aralkyl, wherein R^7 and R^8 are independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^{11} is selected from halo and haloalkyl;

X^1 is optionally present, and if present, is alkyl; and

including the isomers, racemates, salts, and prodrugs thereof.

40. A method of preventing or treating a respiratory disorder in a subject, the method comprising administering to the subject a β-adrenergic agonist in combination with a compound having the structure:



wherein:

R^1 and R^3 are independently selected from -H, alkyl, alkenyl, alkynyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, alkylthio-R^{10}, thioalkyl, aminoalkyl, alkylamino-R^{10}, cycloalkyl, aryl, and aralkyl, wherein R^1 and R^3 are independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^2 is selected from -H, alkyl, alkenyl, alkynyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, cycloalkyl, aryl, aralkyl, hydroxyalkyl, guanidinoalkyl, carboxy-R^{10}, hydroxyaralkyl, alkoxyalkyl, aminoalkyl, alkylamino-R^{10}, thioalkyl, alkylthio-R^{10}, alkylsulfonyl-R^{10}, alkylsulfinyl-R^{10}, heteroaryl, heteroaryl-R^{10}, heterocyclyl, and heterocyclyl-R^{10}, wherein R^2 is substituted or unsubstituted, which if substituted, is substituted with one or more substituents selected from R^{11};

R^4 is selected from -H, cyano, alkyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, alkylsulfonyl-R^{10}, alkylsulfinyl-R^{10}, alkylthio-R^{10}, and alkylamino-R^{10};

R^5 and R^9 are independently selected from -H, alkyl, alkenyl, alkynyl, carbayml, alkylcarbamyl, alkylthio-R^{10}, thioalkyl, aminoalkyl, alkylamino-R^{10}, cycloalkyl, aryl, aralkyl, wherein R^5 and R^9 are

independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^6 and R^{10} are independently selected from -H and alkyl;

R^7 and R^8 are independently selected from -H, alkyl, alkenyl, alkynyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, alkylthio-R^{10}, thioalkyl, aminoalkyl, alkylamino-R^{10}, cycloalkyl, aryl, aralkyl, wherein R^7 and R^8 are independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^{11} is selected from halo and haloalkyl;

X^1 is optionally present, and if present, is alkyl; and

including the isomers, racemates, salts, and prodrugs thereof.

41. The method according to claim 40, wherein the β-adrenergic agonist comprises a β_2-adrenergic agonist.

42. The method according to claim 41, wherein the β_2-adrenergic agonist comprises at least one compound chosen from metaproterenol, pirbuterol, albuterol, levalbuterol, formoterol, salmeterol, terbutaline, isoetharine, levalbuterol, salbutamol, bambuterol, fenoterol, reproterol, tulobuterol, and mixtures thereof.

43. Use of a compound having a structure described in claim 22 alone or in combination with a β-adrenergic agonist for the production of a medicament for the preventing or treating a cardiovascular or respiratory disorder in a subject.

AMENDED CLAIMS
received by the International Bureau on 27 April 2005 claims 44 and 45.

independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^6 and R^{10} are independently selected from -H and alkyl;

R^7 and R^8 are independently selected from -H, alkyl, alkenyl, alkynyl, -$CONR^5R^9$, alkyl-$CONR^5R^9$, alkylthio-R^{10}, thioalkyl, aminoalkyl, alkylamino-R^{10}, cycloalkyl, aryl, aralkyl, wherein R^7 and R^8 are independently substituted or unsubstituted, which if substituted, are substituted with one or more substituents selected from R^{11};

R^{11} is selected from halo and haloalkyl;

X^1 is optionally present, and if present, is alkyl; and

including the isomers, racemates, salts, and prodrugs thereof.

41. The method according to claim 40, wherein the β-adrenergic agonist comprises a β_2-adrenergic agonist.

42. The method according to claim 41, wherein the β_2-adrenergic agonist comprises at least one compound chosen from metaproterenol, pirbuterol, albuterol, levalbuterol, formoterol, salmeterol, terbutaline, isoetharine, levalbuterol, salbutamol, bambuterol, fenoterol, reproterol, tulobuterol, and mixtures thereof.

43. Use of a compound having a structure described in claim 22 alone or in combination with a β-adrenergic agonist for the production of a medicament for the preventing or treating a cardiovascular or respiratory disorder in a subject.

44. A method of preventing or treating a cardiovascular or respiratory disorder in a subject, the method comprising administering to the subject an effective amount of a compound having a structure described in claim 1 in combination with a conventional treatment agent.

45. The method according to claim 44, wherein the conventional treatment agent is a calcium channel blocker.